

## EXPLANATION OF PLATE V.

- Fig. 1. *Tysius amplipennis*; 1 a, head.  
 Fig. 2. *Phryniurus terreus*; 2 a, head (the eye is much too small).  
 Fig. 3. *Cecyropa tychioides*.  
 Fig. 4. *Inophlæus Traversii*.  
 Fig. 5. *Actizeta albata*.  
 Fig. 6. *Phycosecis discoidea*; 6 a, antenna; 6 b, fore tibia and tarsus; 6 c, maxilla with its palpus; 6 d, mentum with the lower lip and its palpi.  
 Fig. 7. *Stenopotes pallidus*.  
 Fig. 8. *Xyloteles costatus*.  
 Fig. 9. *Xuthodes punctipennis*.  
 Fig. 10. *Syrphetodes marginatus*.  
 Fig. 11. Right fore tibia and tarsus of *Actizeta albata* (the artist has placed it in a position to represent the left). 11 a, antenna; but the basal joint has been unaccountably omitted.  
 Fig. 12. Head of *Cyttalia griseipila*.

XXVII.—On a new Sponge of the Genus *Luffaria*, from Yucatan, in the Liverpool Free Museum. By THOMAS HIGGIN, of Huyton.

[Plate VI.]

A REMARKABLY fine specimen of one of the trumpet-shaped sponges has recently been presented to the Liverpool Free Museum by Staff-Surgeon-Major Samuel Archer, stationed at Belize, in the name of Dr. Barry, Staff-Surgeon at Corosal, who obtained it from Ambergris Island, off the coast of Yucatan, Gulf of Honduras; and, thanks to the care and trouble taken by these gentlemen in preserving it and transmitting it to this country, it has arrived in an almost perfect state. From its great size and its resemblance to a speaking-trumpet, Mr. Archer has called it "Neptune's Trumpet."

It is an undescribed species of the group of sponges to which MM. Duchassaing de Fonbressin and Michelotti, in their memoir on the sponges of the Caribbean Sea, gave the generic name *Luffaria*, from the gourd *Luffa*, or "vegetable sponge" as it has been called, in common use in the West Indies and elsewhere\*. This term (*Luffaria*) was accepted

\* The fruit of this Cucurbitaceous plant, when denuded of its soft fleshy parts, is found to have a skeleton consisting of a thickly anastomosed mass of fibres made up of thin-walled cells, which quickly takes up water, and is therefore suitable for washing-purposes. It has lately been introduced into this country as an article of commerce, and is sold in the druggists' shops, cut open down the side and spread out flat, as a flesh-brush for use in the bath.

by Dr. Oscar Schmidt in 1870, in his work on the Atlantic sponges, as serving to represent a family proper to the Tropical seas—also by Mr. H. J. Carter in 1872, as recorded in his contribution to 'Ann. & Mag. Nat. Hist.' vol. x. p. 101—and has now been adopted by the latter in his "Notes introductory to the Study and Classification of the Spongida," published in the last two issues of this Journal.

The sponge about to be described is not figured or described by any of the old writers on the Class; and as no perfect specimen of it exists in the British Museum, Mr. Archer's sponge, which is so well grown and in such good condition, may advantageously be taken as typical of this particular species of *Luffaria*. The specimen consists of two tubes—a very long one, which has a flattish basal attachment, and a small one, which grows up from the base of the larger one, possibly from pullulation, most likely, however, from the development of an embryo which had settled at the base of the larger one; but for present purposes each may be regarded as a zoological individual.

*Luffaria Archeri*, n. sp. (Pl. VI.)

The form of this sponge is that of a tube which gradually increases in width as it increases in length up to its free end, which is somewhat constricted; while at its small or fixed end there is a strong flange-like growth, which forms the basal attachment: hence its general shape is that of a speaking-trumpet, and suggestive of the long horn used in Switzerland to awaken the mountain-echoes, with which tourists are familiar. The inside of the tube presents a slightly circularly ridged appearance, but is smooth; the outside is deeply furrowed transversely throughout its entire length with sinuosities, which have a depth of  $\frac{3}{8}$  to  $\frac{1}{2}$  an inch, and a width of  $\frac{1}{4}$  to  $\frac{3}{8}$  of an inch. The wall of the tube is of uniform thickness nearly throughout its whole length—that is, from the base to within half an inch or an inch of the free end, when it diminishes up to the rim of the aperture, which has a smooth, well-defined, and rather sharp edge; the wall generally measures, from the inside of the tube to the tops of the sinuous ridges on the outside, from  $\frac{1}{2}$  to  $\frac{5}{8}$  of an inch, or occasionally  $\frac{3}{4}$  of an inch, and is composed of a close network of rather rigid, clear amber-coloured fibre, which seldom exceeds 1-100th of an inch in diameter. The fibre has the opaque, white, granular pith-like core peculiar to the family; but in this species the granules do not form a lining or crust on the inside of an axial cavity, neither are they closely compacted into a dense column filling up the axis of the fibre; but the first deposit of hardening

sarcode or horny material has penetrated amongst the granules instead of forming a decided wall around them, and thus the fibre is not tubular, as in most of the *Luffarida*, but solid; and this feature is characteristic. The diameter of the granular core is uniformly (excepting, of course, at the joints or angles of the meshes) about 1-1600th of an inch, and the thickness of the horny material around it is in the young growth also about 1-1600th of an inch, thus making the diameter of the young fibre 3-1600ths of an inch; while that of the oldest fibre measures about 16-1600ths or 1-100th of an inch. The horny skeleton-network does not present any radial lines, but is a reticulation of meshes of nearly uniform figure and character, and is apparently increased by the addition of one polyhedral mesh after another, through the extension of new fibre chiefly projected from the angles of the already formed meshes, which branchlets soon bifurcate, extend, and unite to form new meshes. The round-edged ridges on the outside of the tube are simply extended growths of the ordinary network, which is produced more in one place than another; and they seem to occur much like a succession of rings, though the circle is seldom complete, and often an appearance is assumed similar to that of the surface of the *Meandrina* coral. The rim of the aperture consists of fine, young, reticulated fibre imbedded in very dark-coloured sarcode (nearly black, indeed); and the extension of the tube both in length and thickness appears to be produced by the addition of similar ring-like structure growing apically, endogenously and exogenously. The dermal reticulation supports a strong glazed cuticle of a dark brown colour, through which may now be seen protruding the plain and bifurcated ends of the young fibre. This dermal covering is pierced at irregular intervals with pores, which measure from 1-50th to 1-25th of an inch in diameter, considerable spaces occurring in it in which no pores can be detected; but although the pores are thus found scattered and isolated over some parts of the surface, they are elsewhere found in groups of several together both in the furrows and on the ridges. They lead directly into the "subdermal cavities," which are large and roomy, and which, besides communicating with the areolar structure behind them by means of the usual sphinctral openings in their sarcodic walls, sometimes communicate with each other in a similar way, thus accounting for the paucity of pores in some parts of the dermal layer. The areolar structure of the interior is a series of roomy chambers, which extend from the subdermal cavities across the walls of the tube, and which communicate with each other by means of circular openings in the sarcode which tympanizes the interstices

of the horny network ; these openings are sometimes small, measuring 1-200th of an inch across or even less, and sometimes are as large as 1-50th of an inch ; but whether large or small, the margin of each is a more or less thickened ring, and they are no doubt sphinctral. The sarcode of this areolar structure is not dark-coloured like that of the dermis, but is almost colourless, and is dotted over with rounded granular bodies, which may be regarded, according to the observations of Mr. H. J. Carter, as the pigment-cells, which, when exposed to the light (as they are in the dermal sarcode), become deeply coloured, and in that condition give the sarcode of the surface its characteristically dark brown or black appearance. It is probably for the same reason that the sarcodic surface-layer of the *inside* of the tube is not so dark as that of the outside ; but another reason is that it is not so strong. The position of the vents is a good deal obliterated by this tender dermal sarcode having cracked in drying ; they may, however, be fairly traced, occurring in circular lines on the inner surface of the tube, and rather larger than the pore-openings. Thus, as in all tubular sponges, the vents open into the so-called "cloacal cavity," which is but the great excretory canal of the whole sponge emptying itself at the aperture.

*Size.* The large individual or tube measures 3 feet 9 inches in length, with a diameter of 2 inches at the small or fixed end, where it rises from the flange-like base ; and one of 5 by 4 inches at the other extremity just before it terminates, not being absolutely round at this part. The small individual or tube is 1 foot 7 inches long, its smallest diameter being 1 inch, and its largest  $2\frac{1}{2}$  inches. The proportions of the two tubes are therefore similar. But Mr. Archer has subsequently met with another specimen, which is said to be nearly five feet six inches long.

*Obs.* The large tube has in the living state doubtless been quite round at its free end, like the small tube ; but it has been placed on its side to dry, in which position the walls, having been heavy with water, have not had sufficient strength to retain the original shape of the tube, but have, by depending, somewhat fallen together ; and consequently, drying in this state, it is not quite round at the free end.

The only sponge hitherto figured with which this species might be confounded is that which was described, with illustrations, by Esper in the volume of 'Pflanzenziere' published in 1794, page 222, tab. xx., xxi., xxi. A, as the *Spongia fistularis* of Linnæus, and which appears to be also *Spongia tubiformis* of Lamarck ; but neither the plates nor the letterpress

represent or describe our species, which differs in outward form and appearance as well as in the details of its fibre and its reticulation. The formula of *Spongia fistularis*, in the twelfth edition of the 'Systema Naturæ,' more properly applies to one of the tubular Chalinæ than to any of the Luffaridæ; and the observations of all the old writers on the subject render it almost certain that they included both the tubular Chalinæ and tubular Luffaridæ under the specific name "*fistularis*," the different examples of each then known being taken to be varieties of the same species.

In the sulcate sinuosities of the surface are many examples of both siliceous-spiculed and calcareous-spiculed sponges of humble and diminutive growth, also the stems or branches of Tubuliporidæ and the empty tube-cases of minute Serpulidæ, and many small patches of calcareous deposits; and frequently the dermal covering is seen to be sprinkled over with particles of white sand and other débris, adhering firmly to it, or imbedded in the exposed fibrous network.

Mr. Carter has kindly sent me a tracing of his "rough sketch" of a specimen of the genus *Luffaria* from the East Mediterranean, obtained fresh, and preserved in spirit, by Admiral Spratt, who presented it to the British Museum (No. 73. 4. 6. 9); to which Mr. Carter has obligingly added the following remarks:—"It is tubular, about 6 inches long and about  $\frac{3}{4}$  of an inch in diameter, also bears a somewhat smaller specimen by its side. Thus the foregoing statement upon Schmidt's authority, viz. that the 'family is proper to the Tropical seas,' requires modification; for it is also to be found in the Mediterranean sea. Moreover from this fresh specimen we learn that the aperture is circumscribed by a wide duplication of dermal sarcode, which in a ring-like form surrounds the opening, and evidently performs the sphinctral diaphragmatic office common to vents generally."

#### EXPLANATION OF PLATE VI.

The figure is after an excellent photograph by Robinson and Thompson, and gives the general character and appearance of the sponge faithfully; but it is rather too broad in the lower half, and therefore does not look quite so graceful as the specimen itself.